

5.9 Radiological Hazard

A major radiological hazard event has been determined to have a **Low** likelihood of occurrence in Benton County within the five-year planning cycle of this Plan. Therefore, although some hazard characterization information is presented below, no further risk assessment has been performed for this hazard. Additional analyses to further characterize the risks of this hazard and the development of suitable mitigation action items will be conducted in the future based on periodic reviews of this hazard mitigation plan and available resources

5.9.1 Nature of the Hazard

Radiological hazards can range from relatively localized incidents involving small amounts of radioactive materials in shipment, storage, or use, to large-scale catastrophic events involving fixed nuclear power facilities or detonation of a nuclear weapon.

Smaller sources of radiation hazard are found in medical facilities and some industrial and laboratory facilities where radioactive materials and/or radiation producing devices are used. Some radiation (e.g. radon) is produced naturally, from decomposition of radioactive isotopes in soils and underlying strata.

These radioactive hazards will be in addition to those already identified with the Hanford Site and the Columbia Generating Station.

Historical Events

Approximately three million shipments of radioactive materials are made annually in the U.S. by highway, railway, waterway, and by air. No deaths or serious injuries have ever been attributed to the radioactive nature of the materials involved in a transportation accident. The Hanford Site is used as a temporary storage area for high-level radioactive waste materials; plans call for these waste materials to be shipped to the Yucca Mountain waste facility upon its completion.

Characteristics of the Hazard

Radioactive materials are composed of unstable atoms. These unstable atoms give off excess energy until they become stable – the energy emitted is radiation. The process by which an atom changes from an unstable state to a stable state by emitting radiation is called radioactive decay, or radioactivity. Certain types of radiation are harmful to the cells of the body. The longer a body is exposed to radiation, the greater the risk. Radiation cannot be detected by sight, smell, or any other sense. There are three types of radiation of primary concern: alpha, beta, and gamma (e.g. electromagnetic).

The shipment of radioactive materials and waste to and from the Hanford Site, the Columbia Generating Station, hospitals, and by other users of radioactive materials poses an additional hazard.

5.9.2 Hazard Assessment

Hazard Identification

Nuclear War

Benton County's Comprehensive Emergency Management Plan has concluded that the threat from nuclear attack has diminished since the summer of 1991 with the demise of the Union of Soviet Socialist Republics, and the mutual actions by the United States and Russia to dismantle their land-based intercontinental ballistic missiles. However, the threat of nuclear war still exists. Both the United States and Russia maintain sizeable sea-launched missile capability. In addition, several other countries now possess nuclear weapons.

Vulnerability Assessment

To be determined.

Risk Analysis

To be determined.

5.9.3 Community Concerns

Current Conditions

To be determined.

Ongoing Mitigation

The Federal Emergency Management Agency (FEMA) is responsible for overseeing and evaluating emergency preparedness activities aimed at off-site hazards. FEMA monitors off-site emergency preparedness for compliance with federal laws, regulations, and guidelines. A variety of state agencies, local government emergency management offices, and Energy Northwest coordinate to provide off-site emergency preparedness. These agencies in coordination have developed emergency plans and procedures to ensure the public health and safety in the event of an incident involving a release of radiation off-site.

5.9.4 Mitigation Strategies

Potential mitigation strategies for radiological hazards are based on some combination of three basic protective measures to minimize radiation exposure:

- Distance
- Shielding
- Time.

The greater the distance between the source of radiation and a person, the less radiation received. Plans and preparations for evacuation of neighborhoods or communities in the event of a serious

radiation release also seek to increase the distance between the radiation source and the population.

Remaining indoors with the doors and windows closed can, in some cases, provide an adequate level of protection against radiation. Plans and preparations for notifying communities to remain indoors during a radiological accident can reduce exposure to radiation.

Most radioactivity loses its strength relatively quickly. Limiting the time spent near the radiation source reduces the amount of radiation received. Plans and procedures to allow local emergency responders to monitor a release of radiation would allow determination of when the hazard has passed.

5.9.5 Resources

State Resources

To be determined.

Federal Resources

To be determined.

Other Resources

To be determined.